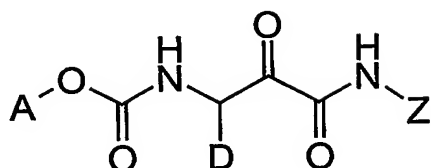


CLAIMS

We claim:

1. A compound of Formula (I):



(I)

or a salt, solvate, or physiologically functional derivative thereof:
wherein

A is the group defined by $(Q^3)-(Q^2)_n-(Q^1)-(Q)_m-$, wherein

Q is CH_2 and m is 0, 1, or 2

Q^1 is C_3-C_7 cycloalkylene;

Q^2 is C_1-C_3 alkylene and n is 0 or 1, or

Q^2 is OR, where R is C_1-C_3 alkylene and n is 1,

Q^2 is SR, where R is C_1-C_3 alkylene and n is 1; or

Q^2 is $N(R')R$, where R' is hydrogen or C_1-C_6 alkyl, R is C_1-C_3 alkylene and n is 1;

and

Q^3 is aryl, heteroaryl, or aryl or heteroaryl substituted with at least one independently selected R^1 group;

D is C_1-C_6 alkyl or C_1-C_6 alkyl substituted with $-NR^2R^3$;

Z is the group defined by $-(X)_p-(X^1)_q-(X^2)$, wherein

X is $C(R')(R'')$, wherein R' is hydrogen or C_1-C_6 alkyl, R'' is hydrogen and C_1-C_6 alkyl, and p is 0, 1, or 2,

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X¹ is C(O)OCH₂, wherein q is 0 or 1, and

X² is aryl, heteroaryl, or heterocyclyl;

R¹ is halo, C₁-C₆ alkyl, aryl, heterocyclyl, or C₁-C₆ haloalkyl;

R² is hydrogen or C₁-C₆ alkyl;

R³ is hydrogen, C₁-C₆ alkyl, -C(O)R⁴, or -S(O)₂NR⁵R⁶;

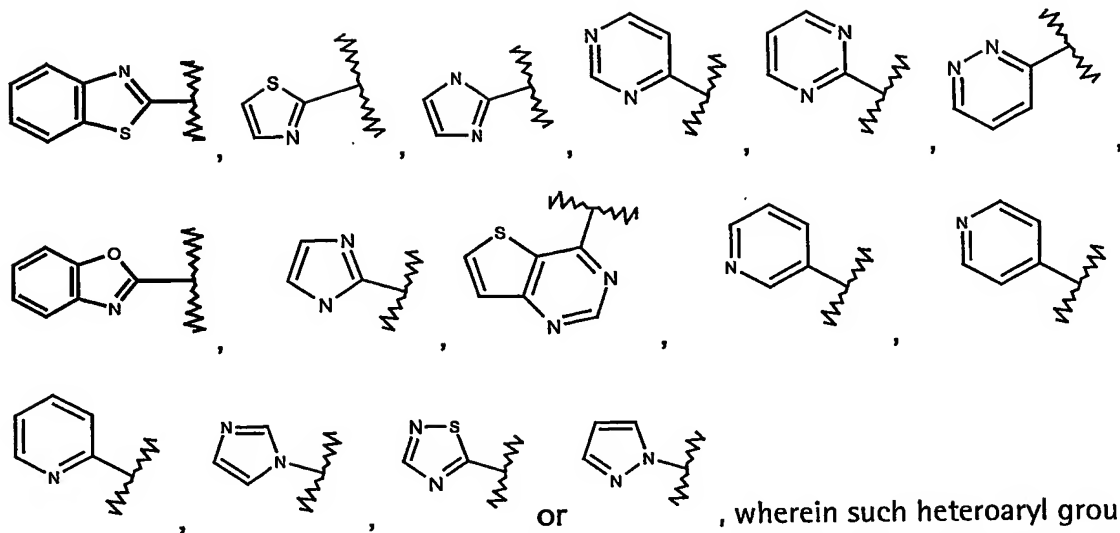
R⁴ is heterocyclyl, -NR⁵R⁶, and

R⁵ and R⁶ are independently selected from hydrogen or C₁-C₆ alkyl.

2. A compound as claimed in claim 1, wherein n is 0 and A is (Q³)-(Q¹)-(Q)_m-.
3. A compound as claimed in claim 1, wherein m is 0 and A is (Q³)-(Q²)_n-(Q¹)_n-.
4. A compound as claimed in claim 1, wherein m and n are both 0 and A is (Q³)-(Q¹)_n-.
5. A compound as claimed in claim 1, wherein Q is CH₂ and m is 0, 1, or 2.
6. A compound as claimed in claim 1, wherein Q is CH₂ and m is 0 or 1.
7. A compound as claimed in claim 1, wherein Q is CH₂ and m is 1.
8. A compound as claimed in claim 1, wherein Q¹ is C₃-C₇ cycloalkylene.
9. A compound as claimed in claim 1, wherein Q¹ is selected from the group cyclobutylene, cyclopentylene or cyclohexylene,
10. A compound as claimed in claim 1, wherein Q¹ is cyclobutylene.
11. A compound as claimed in claim 1, wherein Q² is C₁-C₃ alkylene and n is 0 or 1.

12. A compound as claimed in claim 1, wherein Q^2 is C_1-C_3 alkylene and n is 1.
13. A compound as claimed in claim 1, wherein Q^2 is OR, wherein R is C_1-C_3 alkylene and n is 1.
14. A compound as claimed in claim 1, wherein Q^2 is SR, wherein R is C_1-C_3 alkylene and n is 1.
15. A compound as claimed in claim 1, wherein Q^3 is aryl or aryl substituted with at least one independently selected R^1 group.
16. A compound as claimed in claim 1, wherein Q^3 is phenyl or phenyl substituted with at least one independently selected R^1 group wherein R^1 is halo or C_1-C_6 alkyl.
17. A compound as claimed in claim 16, wherein R^1 is halo.
18. A compound as claimed in claim 16, wherein R^1 is fluoro or chloro.
19. A compound as claimed in claim 16, wherein R^1 is C_1-C_6 alkyl.
20. A compound as claimed in claim 16, wherein, R^1 is methyl.
21. A compound as claimed in claim 1, wherein Q^3 is heteroaryl or heteroaryl substituted with at least one independently selected R^1 .
22. A compound as claimed in claim 1, wherein Q^3 is selected from the group

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is substituted with at least one independently selected R^1 , wherein R^1 is halo, C_1 - C_6 alkyl, aryl, heterocyclyl, or C_1 - C_6 haloalkyl.

23. A compound as claimed in claim 22, wherein R^1 is chloro.
24. A compound as claimed in claim 22, wherein R^1 is methyl.
25. A compound as claimed in claim 22, wherein R^1 is phenyl.
26. A compound as claimed in claim 22, wherein R^1 is piperazinyl or morpholinyl.
27. A compound as claimed in claim 22, wherein R^1 is trifluoromethyl.
28. A compound as claimed in claim 1, wherein D is C_1 - C_6 alkyl or C_1 - C_6 alkyl substituted with $-NR^2R^3$, wherein R^2 is hydrogen and R^3 is $-C(O)R^4$ or $-S(O)_2NR^5R^6$.
29. A compound as claimed in claim 1, wherein D is C_1 - C_6 alkyl.
30. A compound as claimed in claim 1, wherein D is n-butyl.
31. A compound as claimed in claim 1, wherein in one embodiment, p is 0 and Z is $-(X^1)_q-X^2$.

32. A compound as claimed in claim 1, wherein p is 1 and Z is the group defined by $-(X)-(X^1)_q-X^2$.

33. A compound as claimed in claim 1, wherein q is 0 and Z is the group defined by $-(X)_p-X^2$.

34. A compound as claimed in claim 1, wherein X is $C(R')(R'')$, wherein R' is hydrogen or C_1-C_6 alkyl, R'' is hydrogen and C_1-C_6 alkyl, and p is 0, 1, or 2.

35. A compound as claimed in claim 1, wherein X is $C(H)(R'')$ where R'' is hydrogen and p is 0, 1, or 2.

36. A compound as claimed in claim 1, wherein X is $C(H)(R'')$ where R'' is hydrogen and p is 0 or 1.

37. A compound as claimed in claim 1, wherein X is $C(H)(R'')$ where R'' is hydrogen and p is 0.

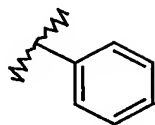
38. A compound as claimed in claim 1, wherein X is $C(H)(R'')$ where R'' is $-CH_3$ and p is 1.

39. A compound as claimed in claim 1, wherein X^1 is $C(O)OCH_2$, wherein q is 1.

40. A compound as claimed in claim 1, wherein X^1 is $C(O)OCH_2$, wherein q is 0.

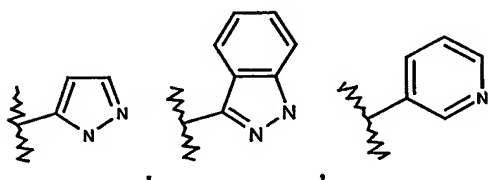
41. A compound as claimed in claim 1, wherein X^2 is aryl.

42. A compound as claimed in claim 1, wherein X^2 is



43. A compound as claimed in claim 1, wherein X^2 is heteroaryl or heterocyclyl.

44. A compound as claimed in claim 1, wherein X^2 is selected from the group



, or substituted derivatives thereof.

45. A compound selected from the group consisting of:

1-benzylcyclobutyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

1-benzylcyclopentyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

benzyl(2S)-2-{[(3S)-3-{[(1-benzylcyclopentyl)oxy]carbonyl}amino)-2-oxoheptanoyl]amino}propanoate;

1-benzylcyclohexyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

(1-Benzylcyclobutyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

[1-(2-Phenylethyl)cyclobutyl]methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

[1-(3-Phenylpropyl)cyclobutyl]methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

(1-Benzylcyclopentyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

(1-benzylcyclohexyl)methyl (1S)-5-[(4-morpholinylcarbonyl)amino]-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

[1-(4-Fluorobenzyl)cyclobutyl]methyl (1S)-5-[(4-morpholinylcarbonyl)amino]-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

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[1-(4-Pyridinylmethyl)cyclobutyl)methyl (1S)-5-[[4-morpholinylcarbonyl]amino]-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

[1-(3-pyridinylmethyl)cyclobutyl)methyl (1S)-5-[[4-morpholinylcarbonyl]amino]-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

[1-(2,6-difluorobenzyl)cyclobutyl)methyl (1S)-5-[[4-methylaminocarbonyl]amino]-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

[1-(4-Fluorobenzyl)cyclobutyl)methyl (1S)-1-[oxo(1H-pyrazol-5-ylamino)acetyl]pentylcarbamate;

[1-(4-fluorobenzyl)cyclobutyl)methyl (1S)-1-[[6-chloro-1H-indazol-3-yl]amino](oxoacetyl)pentylcarbamate;

[1-(4-fluorobenzyl)cyclobutyl)methyl (1S)-5-[[4-(dimethylamino)sulfonyl]amino]-1-(oxo{[(3-pyridinylmethyl)amino]acetyl}pentylcarbamate;

1-(1,3-Benzothiazol-2-yl)cyclopentyl (1S)-1-[oxo(1H-pyrazol-3-ylamino)acetyl]pentylcarbamate;

{1-[[4-phenyl-1,3-thiazol-2-yl]methyl]cyclobutyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

(1-{[(1-methyl-1H-imidazol-2-yl)sulfanyl]methyl}cyclobutyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

(1-{[(2-chloro-4-pyrimidinyl)oxy]methyl}cyclobutyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

[1-({[2-(4-methyl-1-piperazinyl)-4-pyrimidinyl]oxy}methyl)cyclobutyl] methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

[1-({[2-(4-morpholinyl)-4-pyrimidinyl]oxy}methyl)cyclobutyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

{1-[(2-pyrimidinylsulfanyl)methyl]cyclobutyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

{1-[(1,3-benzoxazol-2-ylsulfanyl)methyl]cyclobutyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

{1-[(1,3-thiazol-2-yl)oxy]methyl}cyclobutyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

(1-{[(3-phenyl-1,2,4-thiadiazol-5-yl)oxy]methyl}cyclobutyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;

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[1-({[2-(4-phenyl-1-piperazinyl)-4-pyrimidinyl]oxy}methyl)cyclobutyl] methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;
 (1-({[(1-phenyl-1H-imidazol-2-yl)sulfanyl]methyl}cyclobutyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;
 {1-[(thieno[3,2-d]pyrimidin-4-yloxy)methyl]cyclobutyl}methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;
 {1-[(2-pyrimidinyl)oxy]methyl}cyclobutyl}methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;
 [1-({[4-(4-methylphenyl)-1,3-thiazol-2-yl]oxy}methyl)cyclobutyl]methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;
 [1-(hydroxymethyl)cyclobutyl]methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;
 [1-({[4-(4-chlorophenyl)-2-pyrimidinyl]sulfanyl}methyl)cyclobutyl]methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;
 [1-({[5-(4-chlorophenyl)-1-methyl-1H-imidazol-2-yl]sulfanyl}methyl) cyclobutyl] methyl (1S)-1-(oxo{[(1R)-1-phenylethyl] amino} acetyl)pentylcarbamate;
 {1-[(4-methyl-1,3-thiazol-2-yl)methyl]cyclobutyl}methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;
 (1-2-[(1-methyl-1H-imidazol-2-yl)sulfanyl]ethyl}cyclobutyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;
 (1-3-[(1-methyl-1H-imidazol-2-yl)sulfanyl]propyl}cyclobutyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate; and
 (1-3-[(2-chloro-4-pyrimidinyl)oxy]propyl}cyclobutyl)methyl (1S)-1-(oxo{[(1R)-1-phenylethyl]amino}acetyl)pentylcarbamate;
 or a salt, solvate, or physiologically functional derivative thereof.

46. A pharmaceutical composition comprising a therapeutically effective amount of a compound as claimed in claims 1 to 44, or a salt, solvate, or a physiologically functional derivative thereof and one or more of pharmaceutically acceptable carriers, diluents and excipients.

47. A method of treating a disorder in a mammal, said disorder being characterized by enhanced bone turnover which can ultimately lead to fracture, comprising: administering to said mammal a therapeutically effective amount of a compound as claimed in claims 1 to 44 or a salt, solvate or a physiologically functional derivative thereof.

48. A method of treating a disorder in a mammal, said disorder being characterized by bone loss, comprising: administering to said mammal a therapeutically effective amount of a compound as claimed in claims 1 to 44 or a salt, solvate or a physiologically functional derivative thereof.

49. A compound as claimed in claims 1 to 44, or a salt, solvate, or a physiologically functional derivative thereof for use in therapy.

50. Use of a compound as claimed in claims 1 to 44, or a salt, solvate, or a physiologically functional derivative thereof in the preparation of a medicament for use in the treatment of a disorder characterized by bone loss.

51. A method of treating osteoporosis, comprising: administering to said mammal a therapeutically effective amount of a compound as claimed in claims 1 to 44, or a salt, solvate or physiologically functional derivative thereof.

52. A method of treating osteoporosis, comprising: administering to said mammal therapeutically effective amounts of (i) a compound as claimed in claims 1 to 44, or a salt, solvate or physiologically functional derivative thereof and (ii) at least one bone building agent.